Name: Date:

Exam: Function Reflections (EXAM version 616)

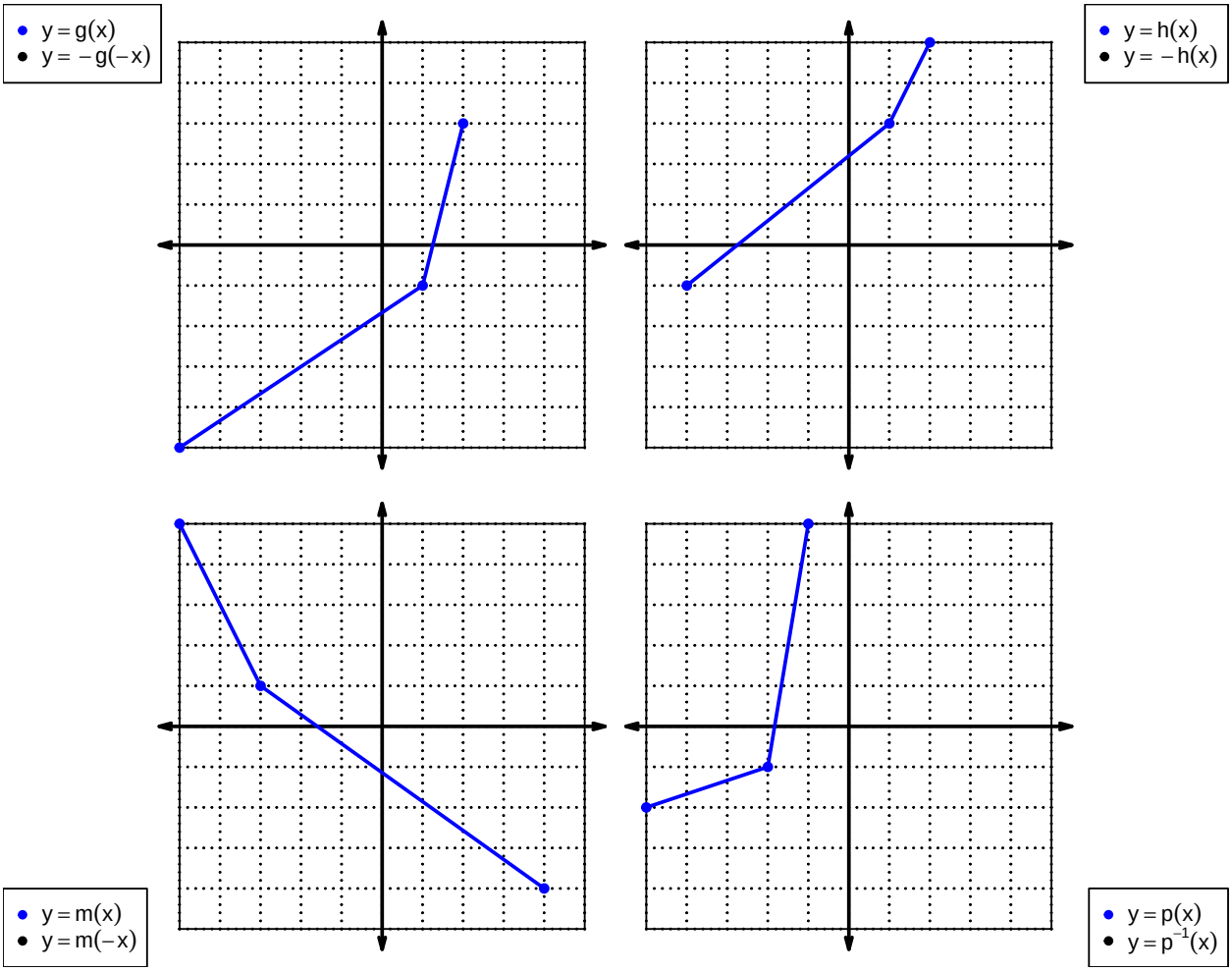
1. (worth 9 points) Let function f be defined by the polynomial below:

$$f(x) = -3x^5 + 4x^4 + 8x^3 + 5x^2 - 2x + 9$$

Draw lines that match each function reflection with its polynomial:

Reflections	Polynomials
$-f(x)$	$-3x^5 - 4x^4 + 8x^3 - 5x^2 - 2x - 9$
$-f(-x)$	$3x^5 + 4x^4 - 8x^3 + 5x^2 + 2x + 9$
$f(-x)$	$3x^5 - 4x^4 - 8x^3 - 5x^2 + 2x - 9$

2. (worth 20 points) In each xy plane shown below, a function is graphed with blue. Draw the indicated reflections (as a second curve, indicated in legend) with black (or with whatever you have). The x axis is horizontal and the y axis is vertical (as typical), and the scale is equal on both axes.



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For all questions on this page, the functions f, g, and h are defined by the table below.

x	$f(x)$	$g(x)$	$h(x)$
1	4	1	9
2	5	9	8
3	7	2	6
4	3	6	5
5	8	3	4
6	1	8	2
7	2	7	1
8	9	5	7
9	6	4	3

3. (worth 3 points) Evaluate $h(9)$.

4. (worth 3 points) Evaluate $f^{-1}(1)$.

5. (worth 3 points) Assuming f is an **odd** function, evaluate $f(-4)$.

6. (worth 3 points) Assuming g is an **even** function, evaluate $g(-8)$.

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7. (worth 15 points) A function, f, is **even** if $f(x) = f(-x)$ for all x in the domain. A function, g, is **odd** if $g(x) = -g(-x)$ for all x in the domain.
   Let polynomial p be defined with the following equation:

$$p(x) \;=\; x^3 - x$$

   a. Express $p(-x)$ as a polynomial in standard form.

   b. Express $-p(-x)$ as a polynomial in standard form.

   c. Is polynomial p even, odd, or neither?

   d. Explain how you know the answer to part c.

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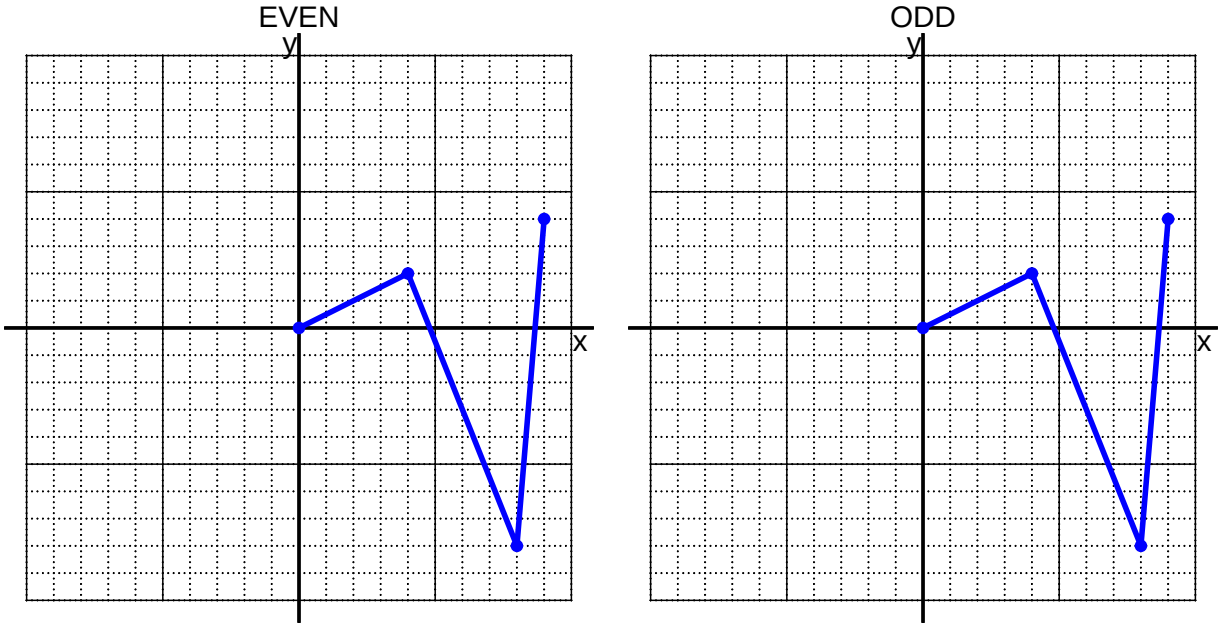
8. (worth 10 points) I have drawn half of a function. Draw the other half to make it even or odd.



9. (worth 10 points) Let function f be defined with the equation below.

$$f(x) = \frac{x}{8} + 7$$

a. Evaluate $f(40)$.

b. Evaluate $f^{-1}(13)$.

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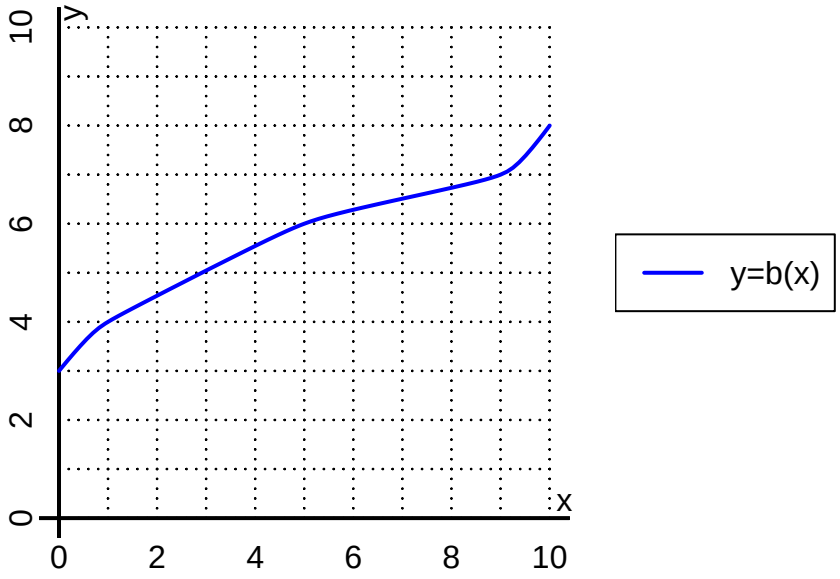
10. (worth 6 points) The function b is represented by the curve $y = b(x)$ graphed below.



a. Evaluate $b(9)$.

b. Evaluate $b^{-1}(6)$.

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11. (worth 18 points) Function f is defined by the table below.

    a. Complete the columns for $-f(x)$ and $f(-x)$ and $-f(-x)$.

x	$f(x)$	$-f(x)$	$f(-x)$	$-f(-x)$
-2	7			
-1	6			
0	0			
1	-6			
2	7			

b. Is function f even, odd, or neither?

c. How do you know the answer to part b?